WATER SUPPLY OUTLOOK
and
FEDERAL - STATE - PRIVATE COOPERATIVE SNOW SURVEYS
for
MONTANA & NORTHERN WYOMING

UNITED STATES DEPARTMENT of AGRICULTURE···SOIL CONSERVATION SERVICE,
and
MONTANA AGRICULTURAL EXPERIMENT STATION

AS OF

JUNE 1
and
SPECIAL MEASUREMENTS
1962

Data included in this report were obtained by the agencies named above in cooperation with the Bureau of Reclamation, U.S. Forest Service, U.S. Geological Survey, National Park Service, State Engineers of Montana and Wyoming and other Federal, State, and private organizations.

UNITED STATES DEPARTMENT OF AGRICULTURE - SOIL CONSERVATION SERVICE

To Recipients of Cooperative Snow Survey and Water Supply Forecast Reports:

The climate of the cultivated and populated areas of the West is characterized by relatively dry summer months. Such precipitation as occurs falls mostly in the winter and early spring months when it is of little immediate benefit to growing crops. Fortunately, most of this precipitation falls as mountain snow which stays on the ground for months, melting later to sustain streamflow during the period of greatest demand during late spring and summer. Thus, nature provides in mountain snow an imposing water storage facility.

The amount of water stored in mountain snow varies from place to place as well as from year to year and accordingly, so does the runoff of the streams. The best seasonal management of variable western water supplies results from fore-knowledge of the runoff.

A snow survey consists of a series of about ten samples taken with specially designed snow sampling equipment along a permanently marked line, about 1000 feet in length, called a snow course. The use of snow sampling equipment provides snow depth and water equivalent values for each sampling point. The average of these values is reported as the snow survey measurement for a snow course.

Snow surveys are made monthly or semi-monthly beginning in January or February and continue through the snow season until April, May or June. Currently more than 1400 western snow courses are measured each year. These measurements furnish the key data for water supply forecasts.

By relating snow survey measurements taken over a period of years to spring-summer runoff during the same period, relationships have been developed which make it possible to forecast seasonal runoff several months in advance of occurrence. In order to make a forecast, once a forecast relationship has been developed, the maximum snow water content at previously selected key snow courses is usually entered in the forecast relationship. More accurate forecasts are often obtained when other factors such as soil moisture, base flow and spring precipitation are considered and included in the forecast relationships.

Listed below are the Federal-State-Private Cooperative Snow Survey and Water Supply Forecast reports available for the West which contain detailed information on snow survey measurements, streamflow forecasts, reservoir storage, soil moisture and other guide data to water management and conservation decisions.

PUBLISHED BY SOIL CONSERVATION SERVICE

REPORTS	ISSUED	LOCATION	COOPERATING WITH
RIVER BASINS			
Colorado and State of Utah	Monthly (Jan.-June)	Salt Lake City, Utah	Utah State Engineer and Other Agencies
Columbia	Monthly (Jan.-May)	Boise, Idaho	Idaho State Reclamation Engineer
Upper Missouri and State of Montana	Monthly (Feb.-June)	Bozeman, Montana	Mont. Agr. Exp. Station
West-Wide	Oct. 1, Apr. 1, May 1	Portland, Oregon	All Cooperators
STATES			
Alaska	Monthly (Mar.-May)	Palmer, Alaska	Alaska S.C.D.
Arizona	Semi-Monthly (Jan.15 - Apr.1)	Phoenix, Arizona	Salt R. Valley Water Users Assoc. Ariz. Agr. Exp. Station
Colorado and New Mexico	Monthly (Feb.-May)	Fort Collins, Colorado	Colo. Agr. Exp. Station Colo. State Engineer N. Mex. State Engineer
Idaho	Monthly (Feb.-May)	Boise, Idaho	Idaho State Reclamation Engineer
Nevada	Monthly (Jan.-May)	Reno, Nevada	Nevada Dept. of Conservation and Natural Resources - Division of Water Resources
Oregon	Monthly (Jan.-June)	Portland, Oregon	Ore. Agr. Exp. Station Oregon State Engineer
Washington	Monthly (Feb.-June)	Spokane, Washington	Wn. State Dept. of Conservation
Wyoming	Monthly (Feb.-June)	Casper, Wyoming	Wyoming State Engineer

Copies of these various reports may be secured from:

Head, Water Supply Forecasting Section
Soil Conservation Service
P.O. Box 4170, Portland 8, Oregon

PUBLISHED BY OTHER AGENCIES

REPORTS	ISSUED	AGENCY
British Columbia	Monthly (Feb.-June)	Comptroller, Water Rights Br., Dept. of Lands and Forests, Parliament Bldg., Victoria, B.C., Canada
California	Monthly (Feb.-May)	Calif. Dept. of Water Resources, Sacramento, Calif.

FEDERAL-STATE-PRIVATE COOPERATIVE

SNOW SURVEYS AND WATER SUPPLY FORECASTS

for

MONTANA AND NORTHERN WYOMING
(Upper Missouri and Upper Columbia River Basins)

Report Prepared
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Issued By

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MONTANA
WATER SUPPLY OUTLOOK
as of
June 1, 1962

The late season water supply outlook has improved during the past month.

June 1 snow surveys indicate the high elevation snow is beginning to melt. There is little or no snow at median and low elevations.

Precipitation over the State was generally above to much above average during May.

Soil moisture is generally good in the valley areas and mountain soils are saturated.

Storage in irrigation reservoirs is generally good. Below average storage is reported in reservoirs in the Milk River and Musselshell River drainages.

SOIL MOISTURE
as of
June 1, 1962

Drainage Basin and Station	Station No.	Elev.	Soil Profile in Inches		Date	Soil Moisture Content in Inches About 6/1/62			
			Depth	Cap.		1962	1961	1960	Avg.
GALLATIN									
College Site	11D2M	4856	54	14.5	6/1	13.8	9.0	10.2	10.4
MADISON									
Red Bluff	11D4M	4900	40	4.7	6/2	2.3	2.2	-	-
SHIELDS									
Battle Ridge	10D11M	6020	48	15.4	6/1	17.0	13.3	-	-
Shields River	10C4M	5850	48	20.8	6/1	21.6	19.4	-	-
FLATHEAD									
Desert Mountain	13A2M	5600	54	8.4	6/1	8.7	-	-	8.7
Marias Pass	13A5M	5250	54	6.5	5/25	6.1	6.0	6.0	5.7

SNOW SURVEY DATA

AS OF MAY 15 and JUNE 1, 1962

(Inches)

SNOW COURSE			CURRENT DATA			PAST RECORD	
						WATER CONTENT	
NO.	NAME	ELEVATION	DATE OF SURVEY	SNOW DEPTH	WATER CONTENT	LAST YEAR	AVERAGE
			MAY 15, 1962				
15B11	Baree Creek	5500	5/15	71	37.7	58.2	40.4*
15A1	Red Mountain	6000	5/14	38	15.4	25.7	16.7*
14A7	Weasel Divide	5450	5/14	65	30.0	46.7	31.4*
			JUNE 1, 1962				
13B3	Big Creek	6750	5/29	84	46.2	51.2	39.7*
13A2M	Desert Mountain	5600	6/1	0	0	-	-
10D4	Devil's Slide	8100	6/2	44	21.4	-	-
13B4	Fatty Creek	5500	5/29	13	6.2	-	-
13D2	Gibbons Pass	7100	5/31	4	1.6	-	7.4*
13B7	North Fork Jocko	6330	5/29	64	35.0	39.1	28.1*
13C3	Skalkaho Summit	7259	5/31	22	11.7	-	-

NOTE: ALL AVERAGES BASED ON 1943-1957 (15 YEAR PERIOD). *ADJUSTED AVERAGE

RESERVOIR STORAGE
as of
May 31, 1962

BASIN	RESERVOIR	USEABLE CAPACITY	USEABLE STORAGE - 1000 A.F. 1962	1961	1943-57 Average
COLUMBIA RIVER BASIN - MONTANA					
Flathead	Hungry Horse	3,428.0	2,859.0	2,891.0	2,770.0**
	Flathead Lake	1,791.0	1,364.0	1,622.0	1,606.7
	Camas 1/	45.2	41.2	42.6	33.3
	Mission Valley 2/	100.3	62.1	79.8	66.7
Clark Fork	Georgetown Lake	31.0	24.2	26.1	23.6
Bitterroot	Como	34.8	-	-	32.5
MISSOURI RIVER BASIN - MONTANA					
Beaverhead	Lima	84.0	57.6	22.4	68.7
Ruby	Ruby	38.8	-	31.1	37.2**
Madison	Hebgen Lake	345.0	281.0	250.8	298.6
	Ennis Lake	41.0	38.4	37.4	34.7
Gallatin	Middle Creek	8.0	7.3	7.5	6.2**
Missouri	Canyon Ferry	2,043.0	1,780.0	1,458.0	1,803.0**
	Hauser & Helena	61.9	52.0	60.7	52.0
	Lake Helena	10.4	7.0	10.0	7.3**
	Holter Lake	81.9	76.3	78.1	72.9
	Ackley Lake	5.8	4.9	-	4.9
	Durand	7.0	4.9	5.2	6.7
	Martinsdale	23.1	12.7	4.0	15.4
	Fort Peck	19,410.0	8,746.0	10,860.0	12,611.0
Sun-Teton	Gibson	105.0	93.1	96.7	97.2
	Willow Creek	32.3	27.4	27.9	24.7
	Pishkun	32.0	28.5	27.8	29.3
Marias	Lower Two Medicine	16.6	-	11.3	9.5
	Four Horns	19.2	-	15.7	9.6
	Tiber	1,316.0	-	739.2	736.6**
	Swift	30.0	25.5	29.1	29.9
	Lake Francis	112.0	96.0	94.4	106.1
Milk	Fresno	127.2	67.5	36.6	96.9
	Nelson	66.8	29.7	26.9	36.3
	Lake Sherburne	66.1	-	30.3	36.9
Yellowstone	Mystic Lake	20.8	1.2	7.3	6.1
	Tongue River	68.0	-	31.7	30.5
	Cooney	27.5	-	-	18.2**

1/ Sum of four small reservoirs on west side of Flathead Lake.
2/ Sum of eight small reservoirs in Mission Valley not including Jocko Lake.
** Average for period of record.

Agencies Cooperating in Collecting Data Contained in this Bulletin

U. S. Forest Service
Region I, Missoula, Montana

U. S. Geological Survey
Helena, Montana

U. S. Army Corps of Engineers
Portland, Oregon
Seattle, Washington
Omaha, Nebraska
Riverdale, N. D.

U. S. Indian Irrigation Service
St. Ignatius, Montana

U. S. Weather Bureau
Helena, Montana

U. S. Fish & Wildlife Service
Red Rock Lakes Refuge
Monida, Montana

U. S. Bureau of Reclamation
Billings, Montana
Boise, Idaho

Montana Power Company
Butte, Montana

Agricultural Experiment Station
North Montana Branch Station
Havre, Montana

Montana State Highway Dept.
East Glacier, Montana

National Park Service
Yellowstone National Park
Glacier National Park

Montana Experiment Station
Montana State College
Bozeman, Montana

Bonneville Power Administration
Portland, Oregon

Montana State School of Forestry
Montana State University
Missoula, Montana

Soil Conservation Service
Montana, Wyoming, Idaho

Soil Conservation Districts
Montana Counties

Johnson Flying Service, Inc.
Missoula, Montana

Water Rights Branch
Dept. of Lands & Forests
Victoria, British Columbia

Department of Northern Affairs
& National Resources
Calgary, Alberta

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FEDERAL - STATE - PRIVATE

COOPERATIVE SNOW SURVEYS

Furnishes the basic data necessary for forecasting water supply for irrigation, domestic and municipal water supply, hydro-electric power generation, navigation, mining and industry

"The Conservation of Water begins with the Snow Survey"